Amendments to the Claims:

The following listing of claims replaces all prior versions and listings of claims in the application.

Listing of Claims:

1. (Original) A method of stabilizing a waste in chemically bonded phosphate ceramic comprising:

preparing a slurry comprising the waste, water, an oxide binder and a phosphate binder;

allowing the slurry to cure to a solid hydrated chemically bonded phosphate ceramic matrix; and

removing bound water from the solid hydrated chemically bonded phosphate ceramic matrix.

2. (Cancelled)

3. (Previously Presented) The method of claim 1 wherein the hydrated ceramic matrix is heated to a select temperature between a lower first temperature where the bound water begins to be driven from the hydrated ceramic matrix and a higher second temperature where non-water components of the hydrated ceramic matrix are volatilized.

4. (Cancelled)

5. (Original) The method of claim 1 wherein the waste and the water have been mixed prior to the preparation of the slurry and further comprising removing a select amount of water from the waste and water mixture prior to preparation of the slurry.

6-7. (Cancelled)

8. (Currently Amended) The method of claim 1 further comprising removing water from the slurry while ~~at least one of~~ mixing the slurry ~~and~~ or allowing the slurry to cure.

9. (Original) The method of claim 8 wherein the water is removed from the slurry through evaporation by heating, and wherein the slurry is heated to a select curing temperature between a first curing temperature where water is removed from the slurry as it cures and a second curing temperature where non-water components of the slurry are volatilized.

10-12. (Cancelled)

13. (Currently Amended) The method of claim 1 further comprising adding a select amount of ~~at least one of~~ a reducing agent ~~and~~ or an oxidizing agent to the waste or the slurry prior to allowing the slurry to cure.

14-15. (Cancelled)

16. (Original) A method of stabilizing a waste in chemically bonded phosphate ceramic comprising:

providing a mixture of the waste and water;

removing a select amount of water from the waste and water mixture to form a residual waste and water mixture;

preparing a slurry comprising the residual waste and water mixture, an oxide binder and a phosphate binder; and

allowing the slurry to cure to a solid chemically bonded phosphate ceramic matrix.

17. (Original) The method of claim 16 wherein the select amount of water is removed from the waste and water mixture through evaporation by heating.

18. (Previously Presented) The method of claim 16 wherein the quantity of water removed from the waste and water mixture is selected to result in a solids content within the waste and water mixture, after the removal step, of equal to or less than 90% measured by weight of the residual waste and water mixture.

19-21. (Cancelled)

22. (Original) The method of claim 16 wherein the oxide binder is a divalent metal oxide and the phosphate binder is KH.sub.2PO.sub.4.

23. (Original) The method of claim 22 wherein the oxide binder is MgO.

24. (Currently Amended) The method of claim 16 further comprising adding a select amount of ~~at least one of~~ a reducing agent ~~and~~ or an oxidizing agent to the waste or the slurry prior to allowing the slurry to cure.

25-37. (Cancelled)

38. (Previously Presented) The method of claim 1 wherein the waste has a first pH level, and further comprising adding a neutralizing material to the waste before allowing the

slurry to cure to at least partially neutralize the waste so the waste has a second pH level different from the first pH level.

39. (Previously Presented) The method of claim 1, further comprising adding a beta-absorptive, gamma-absorptive, alpha-absorptive, or neutron-absorptive material directly to the waste before allowing the mixed slurry to cure.

40. (Previously Presented) The method of claim 1, further comprising dewatering the waste during or before the waste is combined with the oxide binder and the phosphate binder.

41. (Previously Presented) The method of claim 1, further comprising adding a neutralizing material to the waste to at least partially neutralize the waste before the waste is combined with the oxide binder and the phosphate binder.

42. (Previously Presented) The method of claim 1 further comprising at least partially de-watering the waste before allowing the slurry to cure.

43. (Previously Presented) The method of claim 1, further comprising adding an H.sub.2 getter agent to the waste or the slurry to reduce H.sub.2 gas generation.

44. (Previously Presented) The method of claim 1 wherein the waste is an acidic waste, further comprising neutralizing the waste with at least one metal oxide.

45. (Previously Presented) The method of claim 1 wherein the waste is a basic waste, having a pH level further comprising reducing the pH level by adding a neutralizing agent.

46. (Previously Presented) The method of claim 1, further comprising adding a salt to the slurry to control reaction rates during mixing of the slurry.

47. (Currently Amended) The method of claim 1, further comprising adding ~~at least one of~~ a stabilizing agent ~~and~~ or a reducing agent to the waste or the slurry to decrease solubility of constituents of the waste.

48. (Currently Amended) The method of claim 1, further comprising adding an exothermic agent to ~~at least one of~~ the waste ~~and~~ or the slurry that reacts and heats ~~the at least one of~~ the waste ~~and~~ or the slurry.

49. (Currently Amended) The method of claim 1, further comprising adding to ~~least one of~~ the waste ~~and~~ or the slurry a shielding agent for neutrons, alpha particles, beta particles, or gamma particles in the waste to provide an at least partially self-shielding waste.

50. (Previously Presented) The method of claim 1 wherein the hydrated ceramic matrix is in a vacuum chamber and the bound water is removed from the hydrated ceramic matrix by reducing a chamber pressure.

51. (Previously Presented) The method of claim 3 wherein the lower first temperature is approximately 100°C and the higher second temperature is approximately 200°C.

52. (Previously Presented) The method of claim 16 wherein the solid chemically bonded phosphate ceramic matrix comprises bound water molecules, and wherein the method further comprises removing the bound water molecules from the solid chemically bonded phosphate ceramic matrix.

53. Cancelled.

54. (Currently Amended) A method of stabilizing a waste in chemically bonded phosphate ceramic comprising:

preparing a slurry comprising waste, an oxide binder and a phosphate binder;

removing a select amount of water from the slurry while ~~at least one of~~ mixing the slurry ~~and~~ or allowing the slurry to cure;

allowing the slurry to cure to a solid chemically bonded phosphate ceramic matrix; and

driving off bound water from the solid chemically bonded phosphate ceramic matrix to form a solid matrix having reduced weight.

55. (Previously Presented) The method of claim 54 wherein removing a select amount of water from the slurry includes heating the slurry to a first temperature greater than approximately 100°C, and wherein driving off bound water from the solid chemically bonded phosphate ceramic matrix includes heating the solid chemically bonded phosphate ceramic matrix to a second temperature, wherein the second temperature is between approximately 100°C and approximately 200°C.

56. (Previously Presented) The method of claim 54 wherein the waste comprises a liquid waste.

57. (New) A method of stabilizing a waste in chemically bonded phosphate ceramic comprising:

providing a mixture of the waste and water;

removing a select amount of water from the waste and water mixture to form a residual waste and water mixture;

preparing a slurry comprising the residual waste and water mixture, an oxide binder and a phosphate binder;

allowing the slurry to cure to a solid chemically bonded phosphate ceramic matrix; and

removing bound water from the solid chemically bonded phosphate ceramic matrix.

58. (New) The method of claim 57 wherein removing a select amount of water from the slurry includes heating the slurry to a first temperature greater than approximately 100°C, and wherein removing bound water from the solid chemically bonded phosphate ceramic matrix includes heating the solid chemically bonded phosphate ceramic matrix to a second temperature, wherein the second temperature is between approximately 100°C and approximately 200°C.